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Understanding Micro-pantries as an Emergency Food Source During the COVID-19 Pandemic

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ABSTRACT

Objective: To explore the role of micro-pantries in addressing food insecurity during the coronavirus disease 2019 (COVID-19) pandemic.

Design: Qualitative interviews with 20 micro-pantry users and 10 stakeholders during April and May, 2020.

Setting: Six US states.

Participants: Users, aged ≥ 18 years, had obtained food from a micro-pantry in the past 2 weeks; stakeholders, aged ≥ 18 years, played a role in organizing micro-pantries at the community, regional, or national levels.

Phenomena of Interest: Impact of COVID-19 on food insecurity and use of micro-pantries to mitigate it; benefits of, suggested improvements to, and adoption and administration of micro-pantries.

Analysis: We transcribed the data verbatim and performed deductive qualitative content analysis.

Results: Micro-pantry users had increased their use of both micro-pantries and regular food pantries during the pandemic. Micro-pantries helped stretch resources. Users appreciated the anonymity and choice; the mutual aid aspects reduced stigma. Stakeholders described micro-pantries as providing a direct way for neighbors to help neighbors during the pandemic. They described a decentralized and informal system of administration.

Conclusions and Implications: Findings suggest that micro-pantries provided a supplemental food source that supported the resilience of communities during the COVID-19 pandemic.

Keywords: food insecurity, charitable food, pandemic, mutual aid, resilience (*J Nutr Educ Behav*. 2021;000:1–12.)

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INTRODUCTION

The charitable food sector, including food banks and pantries, are an important response to food insecurity in usual (non-pandemic) times. Although most food assistance is provided by the public sector in the US, in 2019, food banks and pantries distributed food to > 40 million people.¹ Food banks play a major role in providing short-term, immediate relief in crisis and are increasingly being used in cases of longer-term food insecurity.² However, the coronavirus disease 2019 (COVID-19) pan-

demic disrupted the charitable food sector, especially in the earliest phases of the pandemic, just as food insecurity was estimated to have tripled.^{3–6} Some food pantries were forced to close, and those that remained open faced shortages in volunteers and funding as well as a change in procedures, including more limited access times and a lack of choice, because of measures to limit person-to-person contact.^{7–9} The struggles and challenges of the charitable food sector suggest a lack of resilience, which the National Academy of Sciences describes as

“the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events.”¹⁰

Micro-pantries represent a solution during crises such as the COVID-19 pandemic. Sometimes called blessing boxes, they resemble Little Free Libraries and are small structures that individuals or groups place in communities and allow neighbors to leave or take foods and household supplies as needed (Figure, A). The Little Free Pantry website describes the micro-pantry movement as “a grassroots, crowd-sourced solution to immediate and local need.”¹¹ Typically, an individual volunteer (referred to as a steward) or organization (eg, hospital or church) provides basic upkeep, but the system is anonymous and open to all to take or contribute. Many micro-pantries have a sign on them letting the public know anyone is welcome to take what you need and leave what you can. Although central data are not kept on the number of

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Figure. (A) Example micro-pantry. (B) 5 days in the life of a micro-pantry (Massachusetts, April–May, 2020).

micro-pantries, and many are home-grown and not accounted for by national organizations, some evidence suggests their rapid adoption during the pandemic. The establishment of a micro-pantry in a community is often accompanied by a local news article. An Access World News (NewsBank, accessed through the Tufts University library) search of Little Free Pantries in US news sources yielded 196 articles in 2018, 253 in 2019, and 646 in 2020.

An advantage to the micro-pantry approach to charitable food is its ability to be quickly and inexpensively deployed in times of crisis. They may appeal as a source of food because using them does not require any form of documentation, and their use can be temporary. They may also help build feelings of neighborhood cohesion as neighbors can provide and receive help from neighbors, a form of mutual aid.^{12–14} Micro-pantries reflect redundancy in the emergency food system that gave individuals access to food when traditional pantries were oversubscribed, closed, or inaccessible. The redundancy and

rapid expansion of micro-pantries are important features to support resiliency,¹⁵ though with limitations.

Although many aspects of food insecurity during the COVID-19 pandemic have been studied (eg, school meals¹⁶ and inequities¹⁷), to our knowledge, no research has examined micro-pantries. We designed this qualitative study to explore the role of micro-pantries in serving a need during the early stage of the COVID-19 pandemic.

METHODS

Study Design and Sample

To meet the study purpose, we conducted a qualitative study comprised in-depth interviews: 20 with people who had taken items from a micro-pantry within the last 2 weeks (hereafter referred to as users) and 10 with stakeholders who had played a key role in organizing micro-pantries in their communities, regionally, or nationally. These numbers were chosen *a priori* and allowed for the inclusion of a range of voices and

achievement of data saturation¹⁸ balanced with the limited resources available for this study. We selected a qualitative approach because of the lack of prior information about micro-pantries and the ability to explore their use in-depth to raise hypotheses for future study. Stakeholders—those participating in the interviews and others listed on littlefreepantry.org—helped recruit users by placing flyers in or near micro-pantries or by posting information about the study on social media. On the basis of where stakeholders posted, we recruited users from Massachusetts, Wisconsin, Ohio, South Carolina, Louisiana, and Indiana. The eligibility criteria for micro-pantry users were aged ≥ 18 years and obtained food from a micro-pantry at least once in the past 2 weeks. To recruit stakeholder participants, we used a snowball sampling strategy. Starting in a local community in Massachusetts, micro-pantry organizers were invited to participate by email. At the end of the interviews, we asked participants for the names of other key stakeholders. The inclusion criteria for stakeholders were aged \geq

18 years and playing some role in organizing or establishing micro-pantries.

Interview Procedures

The study team developed semistructured interview guides for both users and stakeholders. Our team included expertise in qualitative methods, food access and choice, and nutrition interventions and policy. The interview guide for users focused on how the COVID-19 crisis had affected them and their current use of and thoughts about the micro-pantries. User questions are presented in Table 1. The interview guide for stakeholders included the following topic areas: how micro-pantries came about in the community, statewide, or nationally; administration of the micro-pantries; and the role of micro-pantries specifically in the

COVID-19 crisis. The questions are presented in Table 2. Rather than formally pilot testing the guides, we monitored their performance during the initial interviews, and no issues arose.

We conducted the interviews in April and May, 2020. One of the research team members (N.W., L.C., or S.C.F.) conducted each interview virtually using the Zoom videoconference application. The senior author, who has conducted and taught qualitative research for > 2 decades, trained the other members of the team. We designed the interviews to last no more than 1 hour. Participant validation occurred at the end of each interview by summarizing the responses and asking the participants to confirm accuracy. After the interview, we verbally collected demographic data that we used to characterize each sample.

Users and stakeholders self-reported gender by responding to the question, "Would you describe yourself as male, female, nonbinary, or something else?" They self-reported ethnicity by answering the question, "Are you Hispanic, Latino/a, or Spanish origin?" and race by responding to, "Would you describe your race as White, Black, Asian, American Indian or Alaska Native, Pacific Islander, or something else?" In addition, users were asked about marital status by responding to the question, "Are you married, divorced, separated, widowed, never married, or a member of an unmarried couple?"

All participants received a \$25 gift card for their participation. We obtained and recorded verbal informed consent immediately before the interviews. The study was approved by the Tufts University COVID-19

Table 1. Interview Questions for Micro-pantry Users

Question

1. The first question is just to help me learn how COVID-19 has affected you.
 - a. How has your job situation changed because of COVID-19?
 - b. How has your money situation changed?
 - c. Tell me about your household. How many people are in your household right now?
 - i. Tell me about any special food needs you or someone in your household has because of a certain diet or a health problem.
 - d. How much do you worry about getting enough food for yourself and your household right now?
 - i. How much did you worry before COVID-19?
 - e. In what ways, if any, has a concern about getting COVID-10 changed where you get food?
 - f. Tell me about your use of food pantries before COVID-19.
 - i. Do you go to a regular food pantry now, during COVID-19?
 - g. Where did you usually get food from before COVID-19?
 - i. Which of those places do you still get food from now?
2. Next, I'd like to hear your thoughts about the micro-pantries.
 - a. How did you learn about the micro-pantries?
 - b. What led you to use the micro-pantry?
 - c. Tell me about the types of foods you have taken from the micro-pantries.
 - d. Tell me what you think about the foods that are in the micro-pantry.
 - i. How well does the food meet your needs?
 - ii. What foods do you see in there the most?
 - iii. What do you wish you saw more of in there?
 - iv. What are your thoughts about how nutritional the foods are?
 - v. What concerns do you have, if any, about the safety of the foods?
 1. What are your concerns, if you have any, about contamination with COVID-19?
 - vi. What is your interest in somehow sharing your thoughts about the foods you would like to see in there with the people who stock the pantries?
 1. What are the ways you would prefer to share that feedback? [probes: putting papers in the pantries in which you can list what you want; having a community website in which you could list what you want]
 - e. Of all the food you need for your household, how much of it do you get from the micro-pantries?
 - f. What, if anything, would you change about the micro-pantries?

Table 2. Interview Questions for Micro-pantry Stakeholders**Question**

1. My first set of questions are about how micro-pantries came about. Tell me how micro-pantries came to this community.
 - a. What was your role in having them installed in your community?
 - i. Who else were major players? What were their roles?
 - b. What was the motivation for bringing them to this community?
 - c. What obstacles have there been in installing them?
 - d. What has been in place that has helped make it easier to install them?
 - e. What can you tell me about micro-pantries statewide? Nationally?
 - i. How many are there?
 - ii. How did this movement start?
2. My next set of questions are about how the micro-pantries are administered.
 - a. Tell me about how micro-pantries work in your community.
 - b. What is the process for setting up a micro-pantry?
 - c. How do you get the word out?
 - d. What monitoring of the micro-pantries takes place, if any?
 - i. Do you have anything in place to make sure someone is responsible for the micro-pantries, so they do not go empty?
 - ii. Do you have anything in place to make sure the food is safe?
 - e. In what ways, if any, do you coordinate with other charitable organizations such as food pantries or soup kitchens in your community?
 - f. What is your role in administering the micro-pantries in your community?
 - i. Please describe that role.
 - ii. Who else is involved? What do they do?
 - iii. How much work, overall, would you say is involved in installing and maintaining the micro-pantries?
3. In the final set of questions, I would like to get your thoughts about the micro-pantries, specifically during the COVID-19 crisis.
 - a. What, if anything, has changed about micro-pantries since COVID-19?
 - b. Please describe what the micro-pantries are being used for during COVID-19.
 - c. What do you think is the best use of micro-pantries during COVID-19?
 - d. What need do you see them best filling right now?
 - e. In what ways is the issue of potential contamination of foods being addressed?
 - i. In what ways, if any, is fear of contamination being addressed?
 - ii. Volunteers who place food in the pantry are likely going to the grocery store to obtain the food. In the current situation, what concerns do you have for the people putting food in the micro-pantries? What is done, if anything, to reduce the risk to these volunteers?
 - f. What could be improved about the micro-pantries?
 - i. What are your thoughts about receiving feedback and suggestions from the people who take items from the micro-pantries?
 1. What would be your preferred way of receiving this feedback?
 - g. What advice would you give to a key person in another community who wanted to start installing micro-pantries?

COVID-19 indicates coronavirus disease 2019.

Research Review Committee, and ethical approval was obtained from the Tufts University Social, Behavioral and Educational Research and the Duke Campus Institutional Review Boards. The IRB approval for the study was through an exempt review process.

Data Analysis

We audio-recorded the interviews using Zoom and transcribed the recordings verbatim. We used a directed qualitative content analysis approach, which is fundamentally deductive.¹⁹ We developed initial codebooks on the basis of the interview

guides and added thematic codes as they emerged from the data on the basis of discussions among the team. A graduate student on the team (J.A.) did the primary coding under the supervision of the qualitative methods expert (S.C.F.). Inter-coder reliability was established between these team members for all codes on the basis of double coding of 1 user transcript and 1 stakeholder transcript. We achieved at least 90% agreement on all codes. We then developed final themes on the basis of frequencies and patterns found in the data and team discussion. We used NVivo (version 12, QSR International) to assist with the analysis.

RESULTS

Participants

Thirty-four micro-pantry users expressed interest in the study before the maximum sample of 20 was reached. Of these, 5 did not respond to follow-up messages, and 3 were ineligible because they had not taken food from a micro-pantry within the timeframe. Six others were deemed eligible but did not participate: 1 withdrew, and 5 failed to attend the interview session and were unable to reschedule. Of the 20 user participants, the median age was 42 years, 19 were female, 13 were White, and

18 had a child in the household (Table 3). Twelve stakeholders were invited to participate to achieve the sample of 10. The median age of the stakeholders was 41 years, 6 were female, and all were White; they were responsible for the administration of micro-pantries at the community, regional, and national levels (Table 4).

Themes Among Users

Because we used a directed qualitative content analysis approach, our findings represent themes that emerged within the general categories that we asked about: the impact of COVID-19 pandemic on finances and food security, reasons for using the micro-pantries, and thoughts about the benefits of and potential improvements to them.

Impact of the COVID-19 pandemic on finances and food security. Almost half of users were no longer working (“I am currently laid off until mid-June. Money is dwindling fast. I have 2 kids. Things don’t change with them.” Non-Hispanic White female, aged 38 years, with 2 children). Some users did not experience changes in their income, but many expressed that it was difficult to stretch their

food budget with children at home all the time.

Honestly, if we weren’t going to pantries the last 2 months, I’m not sure how we would have ate. I do get food stamps. I think I get \$350 for a month, but especially with the food [price] increase right now, that’s not enough, and then my daughter’s not in school, so that’s extra meals for lunch and it’s 2 extra snacks a day that I’m not used to. (Non-Hispanic White female, aged 44 years, with 1 child)

I do worry a lot [about getting enough food right now]. The reason why is because as a full-time teacher, we were never home. The only meals that I would have to be responsible for was dinner and then the weekend. We can do something like a big dinner on Saturday and it’ll last us a couple of days. Whereas now it’s 3 times a day. (Non-Hispanic Black female, aged 41 years, with 1 child)

Many users said they had worried about having enough food to eat for themselves and their families before the pandemic, but their level of concern had increased.

The food insecurity has always been there because of past history of mine. Since [the pandemic], it has been ramped up to double or triple, the worry about getting food. (American Indian female, aged 55 years, raising 1 grandchild)

I definitely do worry about [getting enough food] and I can’t get around to the big food pantries. [Before the pandemic] I still worried. I still had my days sometimes where I didn’t have much. I didn’t worry as much, I also had a car then, and I also had a job and things weren’t so hard. (Non-Hispanic Black female, aged 28 years, with 1 child)

A major theme was that users had increased their use of regular food pantries during the pandemic, although many noted the changes in operations.

[Use of food pantries before the pandemic] was very minimum all throughout the month... the [regular] food pantries are only doing drive-throughs. Therefore, we’re not getting to actually pick certain things that we want like before. With these mini-pantries, we can go up and pick out the stuff that we need. (Non-Hispanic Black female, aged 46 years, with 1 child)

I’m going to micro-pantries and food pantries. I didn’t really do that before, so much. Maybe once in a while, I guess, if something came up, or if I had to fix my car or something, I just didn’t have the extra money, but not like this... [Before the pandemic] you just kind of went shopping with a volunteer and you had so many points for certain sections. We got to pick and look at the stuff. (Non-Hispanic White female, aged 30 years, with 1 child)

The use of micro-pantries had also increased.

I would go to like micro-pantries once a week or once every couple days just to check it out, but [using it has] increased too. (Non-Hispanic White female, aged 27 years, with 2 children)

Table 3. Characteristics of Micro-pantry Users, April–May, 2020 (n = 20)

Characteristics	Median (Minimum–Maximum) or n
Age, y	42 (27–67)
Sex	
Male	1
Female	19
Children in household	
Yes	18
No	2
Race	
White	13
Black/African American	5
Asian	1
American Indian/Alaska Native	1
Hispanic	
No	20
Marital status	
Married	3
Divorced	4
Separated	2
Never married	5
Member of unmarried couple	6

Table 4. Characteristics of Micro-pantry Stakeholders, April–May, 2020 (n = 10)

Characteristics	Median (Minimum–Maximum) or n
Age, y	41 (35–64)
Sex	
Male	4
Female	6
Race	
White	10
Black/African American	0
Hispanic	
No	10
Level of micro-pantry administration	
Community	5
Regional	2
National	3

I didn't even know about micro-pantries until the COVID-19. (Non-Hispanic White female, aged 47 years, with 3 children)

A few users said they had not experienced any changes in how much they worried about getting food, mainly because of the resources available, including the micro-pantries (“I don’t think I worry so much because I know there’s a lot. Right now, there’s a lot of places out there to help out.” [Non-Hispanic Black female, aged 42 years, with 3 children])

Reasons for using micro-pantries. Users described using the micro-pantries because they were closer than grocery stores and typically within walking distance. They also expressed that the continuous availability of the micro-pantries allowed for more flexibility than other places during the pandemic. They described regular food pantries as having limited hours in addition to limited choice. Many said they were going to regular grocery stores less often because of the risk of COVID-19 infection. Most described the micro-pantries as meeting, by their estimations, 5%–25% of their food needs. The micro-pantries were an important strategy to help stretch limited resources.

I know some of the things that she has [in the micro-pantry], so what I'll do is stretch. If there's something I could get there, then that's

something that I won't buy at the grocery store. (Non-Hispanic Black female, aged 42 years, with 3 children)

For some, the micro-pantries had become a major source of food.

Yesterday I went twice to some of them because I went in the morning to get some stuff for lunch and then I went in the afternoon to get some stuff for dinner. I'm basically relying on it more so than I was before like, "This is nice. I can cut my grocery bill a little bit down." But now it's like, I'm relying on it, whatever I get is for lunch and dinner. (Non-Hispanic White female, aged 27 years, with 2 children)

Other reasons for using the micro-pantries included the opportunity to donate items and switch out foods obtained from regular food pantries and the need to supplement other food sources that were not fully meeting their needs.

I've brang stuff that I've gotten from food pantry. Because I'm not going to use it, but it is not necessarily bad food, you know what I'm saying. So, someone else might need it, so I bring it. (Non-Hispanic Black female, aged 46 years, with 1 child)

We started using them because what we've been getting at the

[regular] pantry...what we were given, there were holes in it, there's other things that I needed. (American Indian female, aged 55 years, raising 1 grandchild)

The items that users took from the micro-pantries mainly were limited to nonperishable foods. Most described taking canned fruits and vegetables and beans. Dried beans, rice, pasta, and prepackaged food such as bread, cereal, and peanut butter were also taken from the pantry (Figure, B) depicts 5 days of items in a typical micro-pantry). For half of all users, hygiene items such as soap, shampoo, toilet paper, and diapers were commonly taken. A few mentioned that these were especially popular items (“That’s the hot item. It’s the cleaning items, personal items.” [American Indian female, aged 55 years, raising 1 grandchild]).

Benefits of and potential improvements to the micro-pantries. A benefit of the micro-pantries that some users expressed was a sense of autonomy. Unlike regular food pantries, they could choose what they wanted rather than being handed a box. Others appreciated that the pantry was stocked with different items each time they visited.

In the micro-pantries, you can go one week and find something completely different at the same, and then the very next day go and find something completely different again that you can use. (Non-Hispanic White female, aged 47 years, with 3 children)

Users also appreciated the opportunity to take from and give back to the micro-pantries and felt that the mutual aid aspect helped reduce stigma.

It makes me happy when I do have something that I can give and help someone else. And when I don't have so much, it's okay because, I mean, it's like I'm taking a little bit now, but I know that when I do have it, I can also give and it kind of balances out a little bit. (Non-Hispanic Black female, aged 42 years, with 3 children)

Another thing you also can't really tell if someone's putting something in or taking it out...That, in a way, removes any stigma related to it. (Non-Hispanic White female, aged 50 years, with 1 child)

A minor theme was the benefit of having posts on social media groups that allowed for communication between users and pantry stewards. Several mentioned checking posts to see what was available in pantries. This community-building can counter the anonymity of the donor if they announce what they left. Nevertheless, users appreciated the chance to engage with their neighbors.

I think that that's something that's very useful from these micro-pantries especially since that it's not just an anonymous grocery store. You don't just go to the grocery store and have some cashier number 2. It's an actual thing that we see on Facebook, people post what they put in the micro-pantries so we actually know the names to the faces of the people that have put things in these micro-pantries. It makes us feel like this COVID-19 pandemic isn't as devastating as it once was when it first started. (Asian male, aged 32 years, with 2 children)

One thing that's been nice during since the pandemic is people have kind of signed up for being in charge of them a little bit to make sure they check on them. And there's a system for making sure you know if one is empty, people will post pictures [on social media] and say it needs attention...It does feel like a community. (Non-Hispanic White female, aged 40 years, with 3 children)

A major theme among users was a feeling of gratitude. Many were appreciative of people donating what they could.

I messaged [person who posted on social media about filling up the micro-pantry] like, 'That is really nice of you, very kind-hearted.' People like me thank you. It's a blessing. It really is. (Non-

Hispanic White female, aged 43 years, with 3 children)

Sometimes it takes a lot of time to restock what people already got and putting new stuff in there. They're doing the best that they can and I'm thankful that they even started those. (Non-Hispanic Black female, aged 46 years, with 1 child)

Users were aware that there was limited oversight of the micro-pantries but generally did not express any serious concerns about food safety or COVID-19 contamination. Many mentioned that they used the same precautions for food they obtained at grocery stores and sanitized their items before using them. One user described how using the micro-pantry allowed her to go to the grocery store less often, saving time and potentially cutting down on the risk of exposure to COVID-19.

My thinking was more about spending an hour in a store line to pick up a few staples when money is tight and all you are going to be able to buy in that one store trip is a couple items... I think it is a big factor for many of us. Shopping is so hard and not a good use of time for me and not good for others during a pandemic if I can only buy \$10 worth of stuff as opposed to stocking up on weeks' worth like I would if money were still coming in. (Non-Hispanic White female, aged 50 years, with 1 child)

In terms of the nutritional benefits, most users felt that the micro-pantries had adequate options, although it was mixed and could vary.

Oh no, it's pretty good. Like I said, I've been seeing the canned goods for vegetable soup. People usually put really high quality. Sometimes there's dried bean that you can fix. We eat a lot of red beans and rice down here. You'll see beans. No, they put really good things in there. (Non-Hispanic Black female, aged 41 years, with 1 child)

It's mainly what people can provide because we're all going through the same issues with not being able to have access to the grocery stores. The nutritional value just varies by day-to-day, I think. We visit these micro-pantries almost every other day, so it just depends on what people have left. (Asian male, aged 32 years, with 2 children)

However, some felt that the nutritional quality of the foods could be improved. Canned goods and other processed, shelf-stable items were most commonly disliked among these users.

They are still shelf stable foods, right, so it would still be super nice to be able to have some kind of fresh food option. Sometimes, a lot of the foods aren't the most healthy foods, either. I don't want to sound complaining because I know people are offering food, but it's still sometimes not the most healthy options. (Non-Hispanic White female, aged 40 years, with 3 children)

The most common suggestion for improvement of the micro-pantry was to provide fresh fruits and vegetables. Healthier canned goods, such as those with low sodium content, were also mentioned. Other common suggestions included increasing the size of the micro-pantry, stocking with more kid-friendly and snack items, and providing more shelf-stable dairy and meat products. Although many users appreciated having the micro-pantries within walking distance, some wished they were more accessible in terms of ability to drive up to them or ease of use for people with disabilities. Other suggestions for improvement included providing refrigeration, improved organization and monitoring of foods in the pantry, and easy-open canned goods for people without homes who do not have access to a can opener.

Themes Among Stakeholders

Interviewers asked stakeholders how they came to adopt the micro-pantry

model, the administration of the micro-pantries, and their perceptions about the role of the micro-pantries during the pandemic. Here we report the themes that emerged in each of these categories.

Adoption of the micro-pantries

All stakeholders participating in this study had been managing micro-pantries before the pandemic, except a local-level stakeholder for whom the pandemic accelerated plans to build a micro-pantry already underway. A major theme among stakeholders was that the decision to adopt the micro-pantry model, whether by installing a single micro-pantry or by helping to found a movement, was related to concerns about food insecurity and inequities in communities—a concern that was driven in many cases by religious values.

I believe as of the last data that came out, we were the second most food insecure state in the country. I am someone, as I mentioned, who is a reader and I read with some frequency on the topic of poverty justice. . . It's a wonderful place to live in many ways, but we're one of the most income unequal regions in the entire United States. There are lots of house poor here. (Female, aged 42 years, national organizer)

For me, [the motivation for bringing micro-pantries to the community is] Jesus. But I think for everybody else it's that same thing, to have meaning and purpose, right? Also to express care and commitment and love of neighbor. You don't have to be a Christian to feel that way. There's lots of human beings who would not define themselves as either Jesus followers or even people of faith and yet they are invested in making their community a safe place, or a good place, or an ethical place, or a just place. Jesus' love, justice is the shorthand for all of that for me. I think love and justice is the shorthand for others as well. That certainly is the motivation. (Female, aged 64 years, community-level organizer)

This program seems like a very natural fit for our Christian congregation. Certainly, for our congregation, it's true that there's an understanding that to be Christian means that you care for the poor and the vulnerable in the community around you and that you take care of their bodily needs, and try to keep them safe and you had to make sure they have food. I think that having that value system in place made this easy. Without question, this was an easy thing for us to do. (Male, aged 35 years, community-level organizer)

Stakeholders described community support as an integral part of successful installation and maintenance of micro-pantries, which included help with construction, painting, and stocking. Most support came from community youth, neighbors, or churches that donated their time and money. Some mentioned websites, such as Little Free Pantry,¹¹ as helpful resources for best practices and answers to common questions for setting up and maintaining successful pantries.

We've had scout groups or kids that are trying to become eagle scouts build them sometimes. Lots of church groups have built them. They have members that have free time and the skill and so they build them. (Female, aged 40 years, regional organizer)

I mentioned that the mayor had the Department of Public Works build some and put them up. I think this Pastor [name], he built some of them. I think there was like a volunteer carpenter at one of the other churches who built one. (Female, aged 39 years, community-level organizer)

Barriers to installation varied among the stakeholders. The most commonly mentioned ones were local governance and community concerns, specifically the policies of health departments, homeowner's associations, and city councils. Public and private property rights were also

mentioned as barriers. However, because of the appeal of the idea, these barriers were usually fairly readily overcome.

Guess what? This has happened multiple times where all of a sudden they see that it's like kicking a puppy. It's such a kind gesture, that mundane or let's call it pedantic policies that are just being picky, seem to be overwritten all the time because the kindness trumps all that. The only place where I'd say there are harder rules that get in the way are condo associations. (Male, aged 62 years, national organizer)

Administration of the micro-pantries. As the users had perceived, all stakeholders described a decentralized and informal system of administration.

When you talk about administration, you need to recognize that a steward is an individual out there, they're part of our network, but it's not like we command and control from the mothership kind of thing about what they do. We give them guidelines in terms of how to deal with the pandemic and that kind of thing, but ultimately, it's up to the individual steward to make the decisions. (Male, aged 59 years, national organizer)

They used a variety of practices to manage micro-pantries. They described it working best when an individual steward or organization had primary responsibility for upkeep. Many stakeholders said that the maintenance of micro-pantries was supported by community partnerships, such as with churches. Half used signup sheets or SignUpGenius to manage stocking responsibilities. Consistent with users, they described the pantries as most commonly stocked with canned goods, pasta, and other nonperishable items.

When asked about the guidelines and practices related to the maintenance of micro-pantries, stakeholders mentioned frequent monitoring and removal of foods that are past date as the most common practices. Many stakeholders did not have any guidelines or concerns about COVID-19

contamination. A few provided resources and support on managing the micro-pantries during the pandemic, but they did not have any explicit rules and regulations.

Stakeholders described a range of platforms and strategies to communicate with users. As mentioned by users, most used Facebook to inform users when the pantry was stocked and to obtain feedback on what users need. Some also described leaving information about other food resources in the area for users. Although they did not have a formal mechanism for feedback at the micro-pantries, a few had received written notes from users.

Perceptions on the role of micro-pantries during the COVID-19 pandemic. A theme emerged around the growth of micro-pantries during the pandemic in terms of number, including new installations, conversion of Little Free Libraries, and terms of use. Somewhat in contrast to users' descriptions of themselves as having financial instability before the pandemic, stakeholders tended to describe the role of micro-pantries during the pandemic mainly in terms of people who had been financially secure and found themselves suddenly in crisis.

[The micro-pantries are] more important than ever. I am so grateful that there was an infrastructure in place. I'm just glad there was anything, I'll say... We're getting close to half again of the number of food insecure people and people who had never had that problem before. These are folks that are not receiving any kind of SNAP [Supplemental Nutrition Assistance Program]. A lot of them probably wouldn't qualify for a means-tested emergency service provider. There are a lot of folks in the gap right now. (Female, aged 42 years, national organizer)

I think that they're seeing a lot more use. I think way more people are without work currently or have been without work and have never needed a food pantry before. I

think that for somebody to be so desperate that they have to go to a food pantry, that's a hard thing for people to do to ask for help... You can go in the nighttime so no one can see you or whenever you want to go and still get some food to feed your family. I think that that has been really good for people. (Female, aged 40 years, regional organizer)

Similar to the theme among users, stakeholders recognized the need for a flexible source of charitable foods. They described the micro-pantries as having a role when grocery stores or regular food pantries were inaccessible or people were afraid of exposure to the COVID-19 virus. They also described the need to supplement what was given at regular food pantries and the need for personal hygiene items.

You don't have to make an appointment. You don't have to ask anybody. You just go when it's convenient for you and then there's no contact. There's no people there. You don't have to go to the food bank and touch things or touch anybody else. There's no socially distant, worrying about if you're 6 feet apart or somebody there. You just go, do your thing, and you go home and wash your hands. That's it. (Female, aged 40 years, regional organizer)

I've heard that the food banks have been hit pretty significantly. I'm hoping that something like this will help maybe relieve some of that that our larger food banks are experiencing. Most importantly for me, I think having this pantry available at any time during the day is really great because people can come and go as they need it and if I have to wait for the church to be open or not have to wait for our [other food ministry] every month. (Male, aged 37 years, community-level organizer)

We've always taken donations of nonperishable items that were not necessarily food like diapers and school supplies and dog food and things like that. That has not

changed for us, but I do think that it's been welcomed during the pandemic, especially people have been putting soap and toilet paper and things that are hard to find. They've been anonymously giving those things, which I think is really great because people are afraid to go to the store. (Female, aged 38 years, regional organizer)

Echoing a minor theme among users, a theme among stakeholders was that micro-pantries had an important role in building community by providing a way to connect with and directly help others during the pandemic when there were so few other outlets.

...it's not only the psychic benefit for those that donate, but it's also the psychic benefit even if you don't partake in terms of taking food from or donating to. It's a visible acknowledgement that we're part of a community, we're part of a neighborhood. Yes, things are pretty extreme right now, but there's still that underlying cohesion and neighborhoodness. (Male, aged 59 years, national organizer)

I think right now, it's interesting because it does give you some sort of connection with other people that you maybe shouldn't be having right now. Like, even though you don't know who they are and you don't know what exactly their story or what's going on in their lives, you know that I put this peanut butter in here on Monday and on Tuesday it's gone, so somebody came to get it. I think right now we're starved for interaction with each other, at least the people that live outside of our homes. I do think that it gives that and some respect. I've seen people leaving notes in them, thank you notes or just cards from kids, things like that, so I do think that it's helping remind people that we're all still out there existing in our separate realities right now but I hope it connects people to each other at least on some level because I think we're starved for that, at the moment. Then obviously, I think

it feeds people too but we've been doing that, it's a little bit different. (Female, aged 38 years, regional organizer)

DISCUSSION

The Coronavirus Aid, Relief, and Economic Security Act was passed early in the pandemic, which removed some barriers to *Supplemental Nutrition Assistance Program* participation and expanded benefits for families with children. The prevalence of food insecurity was the same in 2020 overall compared with 2019 (10.5% in both years); however, food insecurity increased for households with children, households with Black, non-Hispanic members, and households in the South.²⁰ Charitable foods from food pantries and soup kitchens have served to mitigate food insecurity in multiple emergency situations,²¹ but the charitable food sector faced several challenges in the early stages of the COVID-19 pandemic. In this context, micro-pantries offered several advantages: stakeholders could quickly deploy them and use social media to help promote their use and spread. Micro-pantries do not require heavy administration, again allowing for rapid deployment and the ability to adapt to local needs; they provided a safe and local outlet for helping others for those who found themselves in more fortunate circumstances during the early crisis phase; and they do not require person-to-person contact, thus representing a relatively safe way to give and receive help in a crisis involving an infectious disease.

Micro-pantries may be best suited to enhance and supplement other systems rather than fully resolving food needs. Although convenience, accessibility, and anonymity were advantages, both users and stakeholders described the limited range of nonperishable foods that the micro-pantries could support. Community refrigerators may help address the issue of providing perishable foods, although they are still constrained by space. Traditional food pantries also face space and other challenges; however, they have greater ability to store produce and other perishable foods

and have offered these in increasing quantities.^{21,22} Although decentralized administration had several advantages (a stakeholder referred to micro-pantries as a guerilla-style way to get food to people), the lack of coordination and planning may limit the ability to contribute substantially to alleviating hunger in non-pandemic times. Quantitative studies will help gain a better understanding of the role of micro-pantries in terms of food security and diet quality during and post-pandemic and their role compared with traditional food pantries.

Notably, some users described having both very limited financial resources and a lack of concern about obtaining enough food, mainly because of the micro-pantries and other resources available. The US Department of Agriculture Household Food Security Module fundamentally assumes the need to use money to obtain food. Other researchers had considered modifications to this instrument to replace monetary references (“...before I got the money to buy more”) with more general references (“...before I could obtain more”).²³ Our findings support the consideration of such alternative wording for this food security assessment instrument.

Our findings also suggest that micro-pantries served as an important source of nonfood items. In the initial phases of the pandemic, they may have played a role for households whether they were financially challenged or not by providing a way to share items such as toilet paper that had become scarce in stores. Notably, these items are essential but not allowable for purchase using *Supplemental Nutrition Assistance Program* benefits.²⁴

Users and stakeholders both described a role for micro-pantries in building community and creating connections in a situation in which there was otherwise very limited social contact. This finding suggests a unique and important role for the micro-pantries during the pandemic. However, micro-pantries may also play a role in building awareness of food insecurity in a community, even in non-pandemic times. Future studies will help explore how micro-

pantries are a form of mutual aid and contribute to neighborhood cohesion.

Stakeholders described the rapid growth of micro-pantries during the pandemic, which was often led by religious organizations, with many actors, including city government and youth. Although stakeholders did not use the exact terms, they described micro-pantries as having characteristics related to a high level of diffusion per diffusion of innovations²⁵: they are highly observable within a neighborhood or community and on social media; the barriers to entry are low (per diffusion of innovations, they are trialable), especially by converting an existing structure; there were relative advantages during the pandemic, including continuous availability, no person-to-person contact, and the ability to give and directly receive help; there was compatibility with organizational and community norms to help neighbors in need; and the model had low complexity (something national micro-pantry organizations promote on their websites). Stakeholders themselves seemed to have characteristics of innovators, such as having a keen interest in new ideas and solutions and placing less regard on potential risks in favor of the larger vision.²⁵ Many were surprised when we asked about liability and risk, which they viewed as minor given the larger issue of food insecurity. This is in contrast to larger charitable organizations addressing food insecurity, which had to address systems and regulations to mitigate risk, causing delays as they worked to pivot during the pandemic.⁸

This study has several strengths. We were able to capture the role of micro-pantries early in the pandemic at a point of acute crisis. Users were from multiple states in the US, and we achieved a range of voices in the sample with respect to race and ethnicity. However, our sample was limited in terms of men and persons without children in the home. Importantly, we only included English-speaking persons, which limits generalizability. In addition, all users in the study expressed a degree of economic strain before the pandemic. People facing food insecurity

for the first time during the pandemic may not have responded to study recruitment because of perceived stigma. Future studies may require an extra emphasis on confidentiality or may be complemented with an anonymous survey to better characterize the range of users. Our sample of stakeholders administered micro-pantries at multiple levels, and we found a high degree of similarity in administration and operation of the micro-pantries across sites, which improves the generalizability of results. However, our snowball sampling method may have biased the type of stakeholder included in the sample. Notably, most stakeholders at the community level were from religious organizations.

Overall, our findings indicate that micro-pantries were a minor but important contributor to addressing food insecurity during the early stages of the COVID-19 pandemic. For some, micro-pantries served as a backstop to food shortages, especially given the burden that fell on the traditional charitable food sector. They address multiple issues by providing direct and anonymous support for neighbors in a way that preserves autonomy and dignity.

IMPLICATIONS FOR RESEARCH AND PRACTICE

Micro-pantries provide an example of an innovative solution to promote food security and supplement federal nutrition assistance programs amid a crisis. The traditional and new sources of charitable food have been important supports, but these systems have been stretched. This research provides evidence of the usefulness of micro-pantries to support the resilience of communities to meet needs. More fundamentally, this research gave voice to individuals who struggled to meet food needs during the pandemic. Their stories reveal the importance of a multilayered response to the COVID-19 pandemic and the role of community members. These findings suggest the need for additional studies to explore

how micro-pantries support the resilience of the food system. It will be useful to conduct research to continue to understand how and where micro-pantries are deployed and their patterns of diffusion. An understanding of the communications systems that promote diffusion could guide efforts to use them to reduce disparities.

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